IN THE SPECIFICATION:

1. Replace the paragraph beginning at page 4, line 12 of the specification with the following paragraph:

A "communications bus" or "bus" as used in this disclosure and the accompanying claims refers to any physical transmission path arrangement between circuits in a system of cooperating circuits on a common substrate, printed circuit board or the like. The bus structure according to the invention may be used as an internal bus in a device such as a microprocessor, or may be used as an external bus formed on a printed circuit board for example. The invention is particularly helpful in large parallel buses used within an integrated circuit package since such buses are susceptible to manufacturing faults and defects. The term "common substrate" as used in this disclosure and the accompanying claims means either a common semiconductor or other circuit fabrication substrate, or a common printed circuit board, or both. ~~For example~~ For example, the conductors of a bus within the scope of the invention may extend across a semiconductor chip, off chip through appropriate connections, and then across a printed circuit board to another chip. Such a bus is to be considered on a common substrate.

2. Replace the paragraph beginning at page 5, line 13 of the specification with the following paragraph:

The invention is applicable to both unidirectional buses and bidirectional buses. In the case of a bidirectional bus according to the invention, the bus will include a receive switching arrangement and first control switching arrangement in addition to the source switching arrangement. ~~Similarly~~ Similarly, the destination switching arrangement in a bidirectional bus implementation will be accompanied by a send switching arrangement and a second control

switching arrangement. The control switching arrangements are required to control the communication direction in each transmission path, while the send and receive switching arrangements are required to control the additional signals being communicated across each transmission path.

3. Replace the paragraph beginning at page 7, line 4 of the specification with the following paragraph:

Figure 2 is a diagrammatic representation of [[a]] communications bus ~~arrangement~~ arrangements embodying the principles of the invention.

4. Replace the paragraph beginning at page 8, line 22 of the specification with the following paragraph:

Bus 300 includes five separate transmission paths 311 through 315. It will be noted that the number of bus transmission paths is greater than the number of source nodes in the bus. The additional transmission paths represent redundant paths used to ensure that alternate transmission paths extend between each source node 301 through 304 and a respective destination ~~node 304~~ node 305 through 308. Bus 300 also includes a source switching arrangement 318 interposed between transmission paths 311 through 315 and source nodes 301 through 304, and a destination switching arrangement 319 interposed between the transmission paths and destination nodes 305 through 308. These switching arrangements 318 and 319 function to switch between alternate transmission paths as necessary to avoid transmission path faults.

5. Replace the paragraph beginning at page 10, line 19 of the specification with the following paragraph:

Destination switching arrangement 319 also includes a control structure including control ~~device 339~~ device 329. This control device ~~device 339~~ device 329 is similar to device 328 and comprises a structure for providing control signals for switching devices 335 through 338 included in destination switching arrangement 319. In particular, control device ~~device 339~~ device 329 provides a control signal at control input 341 of MUX 335, at control input 342 of MUX 336, at control input 343 of MUX 337, and at control input 344 of MUX 338. As with the source control structure, the destination control device ~~device 339~~ device 329 may include any suitable device for providing the desired control signals, including a series of memory cells, latches, fuses, or other memory arrangement.

6. Replace the paragraph beginning at page 11, line 21 of the specification with the following paragraph:

To effect these connections between source and destination nodes the source and destination switching devices must be controlled properly through the respective control device. ~~In particular~~ In particular, pass gate 324 will be controlled to pass signals from source node 301 to path 311 and destination MUX 335 will be controlled to pass signals from path 311 to destination node 305. In this embodiment binary signals may be used to control the switching devices. For example and logical "1" at control input 330 for pass gate 324 may allow signals to pass while a logical "0" may cause the pass gate to block signals. ~~Similarly~~ Similarly, a logical "1" at control input 341 for MUX 335 may cause the MUX to pass only signals from path 311 to destination node 305 while a logical "0" at control input 341 may cause the MUX to pass only

signals from transmission path 312 to destination node 305. Thus, in this example the control signals to pass gate 324 and MUX 335 will be "1" and "1."

7. Replace the paragraph beginning at page 12, line 15 of the specification with the following paragraph:

It will be noted that the state of source MUX 321 may be irrelevant since the transmission path ~~associate~~ associated with that MUX, transmission path 312, represents an open circuit. However, even an open circuit at transmission path 312 may represent a sufficient capacitance to interfere with the propagation of signals over the adjacent transmission paths. It is therefore desirable that the source MUXs, including MUX 321 be capable of decoupling both MUX inputs from the MUX output. This MUX control also allows the present bus to compensate for errors such as a stuck transmission path or, as will be discussed below with reference to Figure 4, shorted transmission paths. In the case where a MUX in the switching arrangements is capable of decoupling each input from the MUX output, the MUX may require multiple control inputs and multiple control lines to provide those control inputs. In any event, and referring back to the example of an error on transmission path 312, MUXs 335 and 336 in the destination switching arrangement 319 are controlled so that the state or signal appearing on transmission path 312 is not communicated to either destination node 305 or destination node 306.

8. Replace the paragraph beginning at page 14, line 3 of the specification with the following paragraph:

Each subset of source and destination nodes includes a separate source and destination switching arrangement. The source switching arrangement for the first subset includes source

switching devices 424, 425, 426, 427, and 428, and destination switching arrangement includes switching devices 430, 431, 432, and 433. The source switching arrangement for the second subset includes source switching devices 435, 436, 437, 438, 439, and the destination switching arrangement includes switching devices 441, 442, 443, and 444. Within each subset the connection between the switching devices, transmission paths, and source and destination nodes is identical to that set out in Figure 3. Thus, details of the structure and operation will not be repeated here with reference to Figure 4. It will be noted that the two subsets of source switching devices are controlled by a single control device 446 and the destination switching devices are also controlled by a single control device 447. These control devices 446 and 447 control the various switching devices to which they are connected to effect the desired switching between alternate transmission paths as discussed with reference to the control devices 328 ~~and 339~~ and 329 shown in Figure 3.

9. Replace the paragraph beginning at page 15, line 22 of the specification with the following paragraph:

Additional nodes are also included in bidirectional bus 500. A receive node and first direction control node are associate with each source node. In ~~Figure 4~~ Figure 5, source node 508 (OUT) is associated with receive node 509 (IN) and first direction control node 510 (dir), whereas source node 511 (OUT) is associated with receive node 512 (IN) and first direction control node 513 (dir). Similarly, a send node and second direction control node are associate with each destination node. Again in ~~Figure 4~~ Figure 5, destination node 515 (IN) is associated with send node 516 (OUT) and second direction control node 517 (dir), and destination node 518 (IN) is associated with send node 519 (OUT) and second direction control node 520 (dir).

10. Replace the paragraph beginning at page 18, line 23 of the specification with the following paragraph:

It will be appreciated that the transmission path testing method described in Figure 6 is dependent upon not only the bus according to the invention, but also upon the circuits using the bus. In the example of Figure 3, circuits 309 and 310 cooperate with bus 300 to test the transmission paths in order to configure the bus to avoid faults. ~~In particular~~ In particular, circuit 309 must generate the test signal and circuit 310 must listen for the test signal at the appropriate destination node, while the source and destination switching arrangements 318 and 319 control the required source and destination switching devices. Alternatively, a specialized test circuit may be connected to the source and destination nodes to provide the required testing functions. This specialized circuitry would be in addition to the circuits connected for communications over the bus.

11. Replace the paragraph beginning at page 19, line 7 of the specification with the following paragraph:

In the preferred form of the invention, each alternate transmission path is tested to locate faults in the bus. This test procedure may be done once for a particular bus or periodically such as at each system initialization or startup. Based upon the faults detected in the transmission paths, the switching arrangements associated with the bus are controlled to switch signals around the faulty transmission paths assuming sufficient operable paths are available. ~~Of course~~ Of course, there are a limited number of errors that can be corrected. For example, in the embodiment of the invention shown in Figure 3, only one open or stuck transmission path may be compensated for, and still provide normal communications between the two circuits 309 and

310. However, as indicated above, the invention may include even more additional alternate transmission paths and more complex switching arrangements to allow for the correction of additional transmission path errors.